DOCUMENT RESUME

ED 306 526 CG 021 660

AUTHOR Horgan, Dianne D.
TITLE Women's Work is Harder: The Arduous Task of Becoming an Expert.
PUB DATE 88
NOTE 19p.
PUB TYPE Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Difficulty Level; *Employed Women; *Employment Potential; *Job Performance; Personnel Evaluation; Professional Personnel; *Sex Differences

ABSTRACT

Despite advances made by women, male professionals still outperform and outearn women professionals. Various explanations have been put forth, including gender discrimination, biological and/or socialization differences between the sexes and differential demands of parenthood. However, none of these explanations seems to account for the magnitude of the differences. One overlooked explanation for women's lower success rate is the difference between the task facing women and the task facing men. It may be that women's tasks are inherently more complex than men's. There are differences between men and women in the following: (1) the task of becoming an expert; (2) learning from experience; (3) heuristics; (4) pattern recognition; (5) good experiences; (6) importance of the task; (7) managers' tasks; (8) sample size of role models; (9) feedback; (10) base rate information; and (11) judgment under uncertainty. Women can benefit from more direct instruction and more feedback. Mentors, role models, and sensitivity by men to women's needs are needed. (ABL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Women's Work is Harder:
The Arduous Task of Becoming an Expert

Dianne D. Horgan, PhD
Memphis State University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Dianne D. Horgan
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED306526
CG 021660

Despite women's advances, male professionals still outperform and outearn women professionals. Various explanations have been put forth, including gender discrimination, biological and/or socialization differences between the sexes, and differential demands of parenthood. None of these explanations seem, however, to account for the magnitude of the differences. Cole and Zuckerman (1987), for example, investigated whether the burdens of marriage and child care could account for differences in publication rates between male and female scientists. They found no support for the view that motherhood had any negative effect on female scientists' publication.

One overlooked explanation for women's lower success rate is the *task* facing women versus the task facing men. The task of obtaining expertise in any field differs significantly for women and men. This fact is often overlooked when people search for explanations for women's lower rate of success. People ask whether the greatest barriers to women's success are internal or external. The answer may be "neither." In fact, the biggest barrier may well be *the task;* women's tasks are inherently more complex. Edwards (1971) pointed to the importance of understanding tasks when he referred to Brunswik's view that psychology is "not only about people who emit behavior--it is also, perhaps more importantly, about the tasks that elicit that behavior." If work is like a game,

then men have only to learn tic-tac-toe while women have to learn chess. In other words, even in the absence of any discrimination or differential demands on women's time and energy, women would be at a disadvantage simply because their game is harder.

We will use the job of manager as our example in this argument. The same analysis will, of course, hold for any occupation in which women are a minority. We will look first at how one becomes an expert manager and then at how the task differs for women versus men.

How to become an expert.

Recent work on expertise has given us new insights into how people develop high level skills. There are no shortcuts to expertise: all expertise is achieved through extensive experience (Dreyfus and Dreyfus, 1986; Anderson, 1985). The kinds of experience and the extent of the experience are more important than intelligence or schooling. (Both of which women have equally with men.) Learning from experience differs according to the level of the learner, and the learner must go through qualitatively distinct stages. First, novices learn facts and rules which are "context free." That is, they are applied across situations without considering the needs for exceptions. Business students' understanding of organizations is often characteristic of this stage. At this stage, we find no sex differences. As novices gain experience, they learn exceptions to their rules and begin to internalize rules. During this stage practical, on-the-job experience is crucial. Progressing further requires a great deal of high quality experience and feedback. And, as I will argue, this high quality experience is more difficult for women to obtain. At

this stage, women begin to fall behind. Finally, as learners approach expertise, their judgments become more automatic, intuitive, and rapid. The movement from novice to expert is away from deductive processes toward more holistic processes that rely on memory retrieval and pattern recognition. In the earlier learning stages, an intelligent person can "figure out" what to do. But to become competent, it is necessary to see new situations in terms of familiar abstract and complex patterns. I will argue that these abstract and complex patterns of behavior are less clear for women. In addition, women's experiences are subject to systematic biases. So, in this final stage, women are at an even greater disadvantage.

Learning from experience.

To understand how expertise can develop and why the task of acquiring expertise is especially difficult for women, we must consider several factors about learning from experience. First is the way people use heuristics to simplify complex inputs. Second is the nature of pattern recognition. Third are the kinds of feedback and experiences that are needed for expertise to develop. Fourth is the role the particular task plays in learning and how the structure of that task, as well as the motivation and skills of the participants, contributes to the outcome.

The importance of heuristics.

Because of our inherent information processing limitations, we use heuristics. Heuristics are simplifying procedures for processing information. Under some conditions, these lead to perfectly acceptable conclusions. But under certain conditions, they can lead to predictable errors. Heuristics of the kinds discussed by Tversky and

Kahneman (1974) are general and apply to many tasks. These are the type of heuristics most likely to be used when input is complex and when the learner lacks skills or knowledge to understand the input. From extensive research on such heuristics, we can predict what kinds of information are likely to be overlooked or misused. Later in this paper, we will discuss various of Tversky and Kahneman's heuristics and why inferences based on them by women and about women will necessarily be subject to more bias and error.

As skills progress, the learner develops domain-specific heuristics. The quality of these specific heuristics depends on the quality of the learning experiences available to the learner. These specific heuristics are the hallmarks of expertise that make the expert's decisions automatic, intuitive, and rapid. We will show that in most cases, women's experiences are less conducive to the effective learning of appropriate specific heuristics.

Pattern recognition.

Pattern recognition is central to the development of expertise. Learners must extract patterns from the data to which they are exposed. That information is categorized into meaningful "chunks." Through experience, the learner is able to understand experiences in a more holistic fashion because of the similarity of the patterns in the new situations to the patterns in already understood situations. The learner builds his or her own heuristics which allow more information to be processed. The expert will have many thousands of complex patterns available and effective heuristics for processing them. These patterns are the database to which the expert can compare new situations. The richer the database, the easier it is to

match the new situation with a prior one--one in which the expert knows what to do. This matching of situations is probably done in some holistic way, possibly analogous to a hologram, rather than in some logical, deductive way.

It is relatively easy to become an expert at a simple game such as tic-tac-toe because there are relatively few patterns of Xs and Os, and players quickly learn which patterns can win and which can't. Becoming an expert at a highly complex game such as chess, however, is exceedingly difficult because of the huge number of alternatives, and the almost infinite number of patterns. The more complex and abstract the patterns, the more difficult it will be to achieve expertise. Managerial expertise is likewise especially elusive.

Good experience.

Not all experience is equally effective for learning. In general, we know quite a bit about what constitutes "good" experience. People can learn from experience when

1. they have good feedback (preferably feedback about processes and not just outcomes),
2. they are exposed to clear patterns,
3. they are exposed to a large sample of data,
4. they seek and have access to disconfirming evidence,
5. they have access to accurate base rate information, and
6. they have appropriate role models and mentors.

"Bad" experience occurs when the above conditions are not met: when feedback is misleading, when situations are ambiguous, when exposure to relevant situations and role models is limited, when

inaccurate base rate information exists, and when no counter-examples to hypotheses surface. Under these conditions, learning from experience is difficult.

The importance of the task.

While Dreyfus and Dreyfus as well as Anderson believe that the processes involved in achieving expertise are similar no matter what the domain, the time and effort required to reach expertise will vary tremendously depending on the nature of the domain. The nature of the domain determines how much experience and what types of experience are necessary for mastery. Becoming an expert manager is a particularly difficult task because the patterns that the manager must extract are subtle. Individual differences which profoundly color situations make patterns even harder to discern. Multiple factors interact in complex ways. Patterns in diverse situations are similar only at fairly abstract levels.

The task structure itself often determines the kinds of feedback and experiences one is likely to receive. While experience is the obvious key to becoming an expert, it can be difficult for people to learn from their experiences. Einhorn and Hogarth (1978) analyzed common judgment situations and found that in many cases, the feedback that people receive about the quality of their judgments is misleading because of the nature of most tasks. This is because people rarely receive feedback about the quality of *rejected* alternatives. That is, we know only if *chosen* alternatives work. Often they do only because of treatment effects. This may take the form of a self-fulfilling prophecy. Or, as is often the case, the outcome rests on the quality of the implementation of the decision.

When a decision is made, resources are allocated to it, and the resources determine the success. Poor decisions can, and often do, lead to positive outcomes in spite of themselves. And, often rejected alternatives could have been successful. .

In addition, decision makers are unwilling to search for or use disconfirming evidence. This bias is evident when people attend only to information that supports what they already believe. People selectively ignore information that contradicts their hypotheses. This is why people can maintain stereotypes in the face of contradictory evidence.

These aspects of most judgment tasks cause most decision makers to experience more favorable outcomes than unfavorable ones--independent of the decision maker's skills. This, in turn, means that in complex judgment situations, it is inherently difficult to learn from experience. In these kinds of complex situations, good feedback and clear patterns are essential to correct for these biases.

The Male Manager's Task

Consider the male manager's experience. He sees other managers (mostly male) in a variety of situations. He is perhaps told explicit rules ("wear a dark, conservative suit" or "flatter the boss"), and he may infer implicit rules. He learns patterns of how one relates to peers, to subordinates, and superordinates under various circumstances. Although he will see variation in how different managers deal with situations, he will have a large enough sample of behavior to discover implicit rules. Because his experience relative to his own behavior contains much "good" experience (some feedback, some clear patterns, large sample of data, some

disconfirming evidence, fairly accurate base rate information, appropriate role models), his heuristics will serve him well. The resulting conclusions he will draw about how he should act will not be perfect, but there will be opportunities for corrections and revisions. The eventual result is a very large database, cross-referenced so that he can access his knowledge efficiently.

The Woman Manager's Task

Contrast this with the female manager's experience. She will also see managers (mostly male) in a wide variety of situations. But she must analyze each for sex appropriateness. Should she treat an older male subordinate in the same manner that she sees a male manager treat one? Should she behave toward her secretary in the same way that male managers do? She will have to discard many of the behaviors she sees, as irrelevant to her. She may have a female role model or two, but the sample of appropriate female behavior she sees will be small. She can learn from men, but analyzing each situation takes extra cognitive processing. She must separate the task-relevant information from the task-irrelevant information. For example, say a male and a female young manager each see an older male manager deal with a subordinate by putting his hand on his shoulder and conveying a series of task-appropriate messages. The young man can use the whole event without further analysis. The woman has to extract the part of the event that she can use or transform the hand on the shoulder part into some equivalent, but acceptable behavior. This is a little like competing in a cooking contest where one contestant's recipes are all in unfamiliar metric measurements. She has to convert them all before she can perform

the correct actions. The cook who is not skilled in metric measurements is much more likely to make errors and is certainly going to require more time to finish her product.

Research on observation learning emphasizes the importance of observing a model who performs the task in a way appropriate for the learner. A right hander, for example, will find it difficult to learn to knit from observing a left hander. Men and women do social tasks differently, making cross-sexed observational learning more difficult than same-sexed observational learning.

Under poor learning conditions (e.g., small sample size, unclear patterns, few role models, etc.), heuristics often lead to wrong conclusions. This means that there is a much greater probability of making judgmental errors about women's behavior In other words, it is harder for women to learn from their experience because their experience is of a lower quality than men's when it is evaluated in terms of the favorableness of the learning conditions.

Sample size.

Women will always be exposed to fewer appropriate behaviors because of fewer female role models and because many of the male behavior patterns they observe are not behaviors they can emulate. Women therefore run the risk of overgeneralizing from a small sample and extracting incorrect rules. People are notoriously insensitive to sample size, which leads to biases in judgment. For example, if I play poker only once and rely on my experiences in one game which may, by chance, be atypical, I might conclude that three of a kind is more common than two pairs. If another person has played many games, the distribution of hands in that larger sample

of games will approximate more closely the actual probabilities. Small samples fluctuate more than large samples. If women consistently draw inferences from small samples, then they will draw more incorrect inferences. Over time, then, the woman manager has fewer relevant experiences on which to build her database, and her inferences are subject to more bias and errors. Since expertise comes from the accumulation of experiences that allow the learner to extract consistent patterns, female managers will necessarily be at a disadvantage.

The smaller sample of female-appropriate behavior will always make it more difficult to obtain information to disconfirm hypotheses: finding counter-examples is difficult if examples are rare. This means that if a man does draw an incorrect inference about the implicit rules, chances are good that in his large sample of observed behavior, he will find some counter-evidence. It is more difficult for women to obtain disconfirming evidence, simply because of the smaller sample of observed, relevant behavior.

Feedback.

High quality, task-relevant feedback is essential to becoming an expert. The person supplying feedback to the woman has the same problem of sample size and matching appropriate patterns. If a woman is unsuccessful at a task, her boss needs to have in mind a pattern of how the action should have been performed. Chances are his "prototype" of how to make a sales presentation, for example, is based on how males ought to make sales presentations. The feedback the woman receives might be inappropriate. For example, if the feedback is to be more aggressive, that might also result in

poor performance because overly aggressive women are perceived negatively. It is often difficult for male managers to diagnose the reasons for a woman's poor performance, because of the lack of prototypes of how women ought to perform certain tasks.

Mentoring relationships are very important sources of feedback, particularly process feedback because the mentor is involved in the process of the protege's work and does more than just evaluate the outcome. Process feedback evaluates the *process* of the learner's work, while outcome feedback just evaluates the finished product. Obviously much more can be learned from process feedback. If the mentor and the protege are the same sex, then the process by which they both manage a situation will be relatively similar. If the mentor and the protege are opposite sex, then the processes will match less well, making extraction of patterns difficult. The result will be less direct and less accurate feedback.

Base rate information.

We use our subjective estimates of base rates to form our expectations about people's performance. In a Pygmalian type way, those expectations can lead to self-fulfilling prophecies. We also use our subjective estimates of base rates when we make attributions about people. Suppose we believe that most American men do not bake brownies for PTA. If we know John, like most men, refused to bake brownies, we attribute his behavior to external causes; we do not blame him. If we know Jack, however, agreed to bake brownies, we attribute it to *internal* causes: I.e, he is an unusually wonderful person. If we believe that most American women will bake brownies for PTA, then we would make very different judgments

about two women who had behaved in exactly the same manner as Jack and John. Internal (and negative) causes explain the behavior of the one who refuses to bake brownies. The one who does the typical behavior and bakes the brownies gets little praise.

Estimates of base rates about women managers will be subject to more bias since there are fewer women managers. This means that women's behavior will result in different attributions than would similar male behavior. So even if women are able to extract the appropriate patterns and learn from their experience, the interpretation of their behavior will be subject to more biases than that of men. This, too, will degrade the quality of feedback to women. Interestingly, people ignore statistical base rate information, preferring their own estimates based on isolated cases with which they are personally familiar (Nisbett, Borgida, Crandall, and Reed, 1976). This means that presenting "hard" data about women's abilities will have little effect while "soft" data, in the form of anecdotes or case studies, will have more impact on estimated base rates.

Judgment under uncertainty.

To make matters worse, women's level of uncertainty will always be higher than men's because, in effect, women always have an extra variable to take into account, namely gender. This greatly increases the amount of uncertainty with which women must deal and the amount of cognitive processing women must do compared to the men. Take, for instance, a situation where a subordinate could be younger, the same age, or older; at a level just below the manager or two levels down. These factors yield six possible types of situations

for which a manager might have patterns. While all managers would have to consider whether the subordinate is male or female (increasing the number of situations to 12), the female manager must consider the sex of the manager. Male manager behavior is the norm and hence all that need be considered by the male. Females must know the male pattern, then decide if and when they ought to do it differently. This means women must know a male and a female version of each of the 12 situations, increasing the number of patterns to 24.

Situations are almost always more ambiguous for women. Not only does this obscure the patterns that women must learn to extract to become expert, but the ambiguity also increases the complexity of each action. For example, suppose a male boss invites a young male manager for a drink after work. That action may have several possible meanings. The young manager can plan a strategy corresponding to each of them. The young female manager, in the same situation, is faced with a wider array of possible meanings. While the male manager is concentrating on fairly high level strategies, the female must have a broader range of responses ready. She does not have the luxury of confining her analysis to high level business strategies.

The increased complexity with which women must deal is not, of course, confined to the area of sex. Most behaviors take on different meanings when performed by women versus men. Male subordinates respond differently to criticisms made in the same way when they come from women versus men. Some female subordinates may feel more comfortable taking orders from men.

Clients respond differently. This does not mean that people will always respond less favorably to women; it does mean that it is difficult for women to learn how people will respond to them if their observation learning is restricted to seeing how others respond to men.

Speeding up the process for women

Returning to our list of conditions under which people can learn from experience, we see that women necessarily will have more difficulty obtaining feedback, will receive less helpful feedback, will often be presented with ambiguous patterns of behavior, and will always have a smaller sample of role model behavior. In short, the task of becoming an expert is unquestionably more complex and difficult for women. The conditions for acquiring tacit knowledge will differ drastically as long as women are numerically underrepresented. Even in the absence of any overt discrimination, as long as women are a small minority, they will have less chance to succeed.

What's to be done? We know that some tasks are inherently more difficult to learn than others. In practical terms, that means that only the brighter people will learn them, or that it will take longer to learn them, or that people will need special instruction to be able to master them. Women can benefit from more direct instruction and more feedback. The following policies may make the task of becoming an expert manager easier for women.

1. A sensitive mentor can be tremendously important. The mentor's duties should include reducing ambiguity, helping the protege see the patterns and implicit rules, and giving

appropriate feedback. If the mentor is not female, then he should be someone who has successfully mentored other women so that he has acquired some expertise with regard to women managers. Mentors to women have an especially difficult task and need to have an appreciation of the women's perspective. Mentors to women need to spend some time with successful women to acquire that perspective.

2. Each organization has its own culture and implicit rules. Special effort is needed to be sure women are able to extract the rules.
3. The number of role models needs to be increased. In business school courses, for example, guest speakers, cases centering on women, and films are all ways to increase the opportunity to see a wider sample of female-appropriate behavior. Within organizations, workshops, conventions, and other activities that allow women to see other successful women are helpful. These face-to-face experiences have more of an impact than statistical data. In study after study, it has been demonstrated that people rely on first hand accounts rather than on carefully compiled group data.
4. Men who evaluate women need to be sensitive to the differences discussed in this article. Here, too, men need access to successful female role models so that their subjective estimates of base rates can be calibrated. In particular, evaluators need to avoid attributing slow

progress to internal causes. Extra feedback can accelerate women's progress.

5. Women may need help in finding disconfirming evidence since their own experience may not yield it. Help them explore what might have happened had they chosen different alternatives.
6. Social and work patterns are being established which will help to clarify roles. If a company has a climate that frees women from some complexity, their task will be easier. For example, if personnel decisions are known to be made fairly, if policy is set in meetings rather than on the golf course, if sexual harassment is not tolerated, and if there are some women in decision-making roles, then the task of becoming an expert manager is much easier.
7. Women can and do learn from men. Men can, however, learn to be better teachers. Men can, for example, analyze their own behavior and separate the task-relevant behaviors from the task-irrelevant ones. Men who are expert managers act intuitively and may not be consciously aware of why they behave as they do, but they can analyze their own behavior and make those results available to women. By becoming more aware of the need for high quality feedback to women and the need to focus women's attention on the task-relevant aspects of managerial behavior, men can compensate for the more difficult task that women face. The expert manager must ask himself how a particular situation could have been

successfully handled by a woman. The woman who has the opportunity to observe the successful male, and who is also given his interpretation of how a woman could have handled the situation, will see the patterns more easily.

REFERENCES

Anderson, J. (1985). *Cognitive Psychology and Its Implications.* New York: W.H. Freeman and Company.

Cole, J.R., & Zuckerman, H. (1987). Marriage, motherhood and research performance in science, *Scientific American, 256*, 119-125.

Dreyfus, H., and Dreyfus, S. (1986). *Mind Over Machine.* Macmillan: The Free Press.

Edwards, W. (1971). Bayesian and regresssion models in human information processing--a myopic perspective. *Organizational Behavior & Human Performance, 6*, 639-648.

Einhorn, H. J., and Hogarth, R.M. (1978). Confidence in Judgment: Persistence of the Illusion of Validity, *Psychological Review, 85*, 395-416.

Nisbett, R.E., Borgida, E., Crandall, R.,and Reed, H. (1976). Popular Induction: Information Is Not Necessarily Informative," in J.S. Carroll and J.W. Payne (Eds.), *Cognition and Social Behavior*, Hillsdale, N.J.: Lawrence Erlbaum.

Tversky, A., and Kahneman, D. (1974). Judgments Under Uncertainty: Heuristics and Biases, *Science, 185*, 1124-1131.